Attachment 1:
Generic Plan Modification for Coal Combustion Materials Recovery From Wisconsin Electric Power Company Landfill Sites

February 5, 2006

Prepared by: Bruce Ramme, P.E. - Manager, Land Quality, Wisconsin Electric Power Company, 333 W. Everett Street, Milwaukee, WI 53203

Purpose: This generic plan modification is an addendum to the Cooperative Agreement between Wisconsin Electric (WE) and the Wisconsin Department of Natural Resources (WDNR).The purpose of this generic plan modification is to establish an environmentally responsible plan for the removal, recovery and characterization of coal combustion materials removed from licensed and unlicensed WE combustion material landfill sites; and for beneficial utilization of these recovered materials in accordance with Wisconsin Administrative Code Chapter NR 538 categorization and utilization rules for coal ash.

Background Information: The utilization of coal combustion by-products from Pleasant Prairie Power Plant (P4) has continued to grow since the plant was placed in operation with virtually all of the fly ash and bottom ash being utilized currently. Only small amounts of coal combustion by-products from plant cleaning and water treatment processes are currently placed in the operating landfill cell. The demand for bottom ash currently exceeds production in southeast Wisconsin for use under concrete pavements and foundation slabs. Utilization of bottom ash in place of crushed stone and gravel helps to preserve virgin materials, preserve licensed landfill airspace and reduce the need for new gravel pits, stone quarries and landfill sites. The high quality ASTM C618 Class C fly ash produced at P4 has earned an international reputation for use in concrete and the demand for P4 fly ash also exceeds production from the plant. The removal of coal combustion materials stored in WE landfills will allow us to meet market demands for fly ash and bottom ash produced at P4 through patented and patent pending processes developed at WE. Other benefits include the recovery of otherwise lost energy, preservation of natural resources (such as coal, sand, gravel, crushed stone, clay, shale, and limestone), preservation of existing licensed landfill capacity, reduced need for new landfills, reduced environmental groundwater contamination risks from landfills and potential recovery of the land presently dedicated to landfill storage of coal combustion materials for other use.

The following are landfills with the potential for recovery of coal combustion materials to which this plan can apply:

Caledonia Ash Landfill

Comment [s1]: This amended version of Attachment 1 includes a large number of formatting changes (not shown) and numerous substantive changes from the original:
1) Title changed to be more consistent with terminology used elsewhere.
2) Date updated.
3) Title of Bruce Ramme updated.
4) Language modified in several places to reflect the expanded approval for ash recovery described in the main body of the Agreement.
5) Language modified in several places to carefully distinguish the status and approved uses for material recovered from licensed landfills versus unlicensed sites.
6) Clarifies that a reference to annual reporting refers to reporting under NR 538 rules.

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WDNR Site License #03232
4801 E. Elm Road
Oak Creek, WI. 53154

North Oak Creek Landfill
WDNR Site License #00349
Federal ID Number 241219440
4801 E. Elm Road
Oak Creek, WI. 53154

South Oak Creek Landfill
WDNR Site License #02357
4801 E. Elm Road
Oak Creek, WI. 53154

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St. Francis, Wisconsin¶
Milwaukee County¶

System Control Center Ash Landfill
WDNR Site License #02887
N20 W23501 Ridgeview Parkway
Pewaukee, WI 53072

Highway 32 Ash Landfill
WDNR Site License #02801
1866 N. Port Washington Rd.
Grafton, WI 53024

Cedar-Sauk Landfill
WDNR Site License #00603
Federal ID Number 246049210
Cedar-Sauk Road
Town of Cedarburg
1.5 miles west of Saukville

Highway 59 Landfill
WDNR Site License #00918
Federal ID Number 268153160
Along Arcadian Avenue, east of
Hwy. 164/59
Town of Waukesha

Pleasant Prairie Ash Landfill
WDNR Site License No. 02786
8000 95th Street
Pleasant Prairie, WI 53158

Coal combustion material

recovered from the unlicensed Kansas Avenue Landfill, located in St. Francis, Wisconsin, Milwaukee County and other We Energies early coal ash disposal areas that predate licensed landfills will only be used for ash reburn fuel supplement.

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Characterization of Landfilled Coal Combustion Materials: WE has had a long standing practice of dedicating landfill sites for the placement of only coal combustion materials. This practice was confirmed in 2000 during construction operations at the Highway 59 Ash Landfill in Waukesha, where over 100,000 tons of coal combustion materials were excavated. This practice was also demonstrated during the pilot removal and processing of approximately 20,000 tons of coal combustion materials from the P4 landfill in 1998. During that process, the removed materials were crushed, screened and periodically sampled in accordance with ASTM D2234. It was found that over 99% of the material removed consisted of coal combustion products with foreign materials consisting of lost items from landfill operators (for example: soda pop cans, safety ribbon, gloves, etc.). WE will continue the screening practice to ensure the quality of coal combustion products removed for use as a supplemental fuel at P4 and to meet the categorization and usage requirements of ch. NR 538, Wis. Adm. Code.

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NR 538 Rules: Although ch. NR 538, Wis. Adm. Code does not specifically apply to coal combustion materials recovered from landfills, the cooperative agreement between Wisconsin Electric Power Company and the Wisconsin Department of Natural Resources allows using ch. NR538, Wis. Adm. Code as a technical approach for characterization and use of coal combustion materials that originated as coal combustion by-products from WE power plants. For the purposes of this Agreement, all coal combustion materials recovered and beneficially used under this Agreement shall be regulated as a coal ash under NR 538.

Engineering Plan for Coal Combustion Materials Removal: The coal combustion materials landfilled consist of primarily bottom ash, solidified and/or conditioned fly ash and wastewater treatment system solids (which also contain primarily ash). Wisconsin Electric will remove the landfill cover from the cell to be excavated. The landfill cover generally consists of a topsoil layer, a drainage and rooting zone soil layer and a clay soil capping layer. The Cedar-Sauk, Highway 32 and Highway 59 Landfills also contain a geomembrane layer. The material that is removed from the landfill will be crushed and screened as necessary. Sampling and analytical testing will be done in accordance with the criteria specified in ch. NR538, Wis. Adm. Code and the criteria specified in this generic plan modification. Storage of the coal combustion materials will be done in accordance with section NR538.16 (1), Wis. Adm. Code and the criteria specified in this generic plan modification. Storage of the excavated coal combustion materials will occur within the landfill footprint until it is able to be beneficially reused per the criteria specified in ch. NR 538, Wis. Adm. Code. Any material that is not suitable for beneficial

use, such as miscellaneous debris or soil, will be separated and properly placed in a designated area within the current open active cell. Miscellaneous materials, such as soda pop cans, gloves, etc., will be added to the appropriate power plant's waste stream. Topsoil, rooting zone soil and clay will be properly stored on site for future use in developing or restoring the landfill property.

Recovery of coal combustion materials will be conducted in accordance with all existing air, waste and water regulations. It will proceed in a manner that will minimize dust, minimize ash contact water, and keep surface water drainage away from the removal area. The opened area for coal ash recovery activities will be minimized to only that needed for removal equipment and slope stability safety of constructors. All open areas will be watered as required to prevent dusting. The removal will be staged to minimize open areas and processed coal combustion products will be stored within the active removal area. All existing site drainage for ash contact water and stormwater runoff will also be maintained.

Hours of Operation: Recovery of coal combustion materials will only occur on a Monday thru Friday basis during daylight hours or during the operating hours permitted in the existing plan of operation for the site (whichever is more restrictive).

Removal and Processing Equipment: Recovery of coal combustion materials will be performed with a standard power excavation shovel. The coal combustion materials will then be loaded into crushing and/or screening equipment to control particle size and remove foreign materials. Topsoil and clay materials will be removed by a bulldozer or scraper depending on the area involved and contractor equipment available. The topsoil and clay materials will be neatly shaped and stockpiled on site for future use on the property. These stockpiles will be protected with erosion control measures (such as hay bales or silt fence) to prevent losses to surface water.

Removal Area: The opened area for coal combustion material recovery activities will be minimized to only that needed for removal equipment and slope stability safety of constructors. All open areas will be watered as required to prevent dusting.

Maintenance of Partially Opened Landfill: The opened area for coal combustion materials recovery will be customized on a site specific basis. For example, an active operating landfill site will utilize water for dust control, leachate collection or containment systems, and surface water controls such as silt fences, site sedimentation ponds, etc. Recovery operations in previously closed landfills will also utilize water for dust control, provide an area for collection of ash contact water and leachate, and include appropriate surface water protection controls. Surface water protection controls would include diversion berms to keep surface water from entering the active recovery area and the use of hay bales and silt fences as required. The locational performance criteria identified in NR 504.04 "Landfill Location, Performance, Design and Construction Criteria" unique to each landfill will be considered in developing site specific removal operations to minimize the risk of impact to flood plains, wetlands, streams, rivers, lakes, wells, parks, highways, critical habitat areas, etc. WE will be responsible for performing

coal combustion material recovery activities in a nuisance free manner. This includes no additional noise, dust, groundwater and/or surface water impacts to the area.

Dust Control: Recovered materials contain residual moisture similar to soils and are dust free when removed and processed as demonstrated during pilot recovery operations. The surface of stockpiles of screened coal combustion materials will be compacted and watered as required to eliminate the potential for dusting.

Leachate and Ash Contact Water: Leachate and ash contact water will be collected for use in the active recovery area for dust control or hauled for treatment at the nearest WE power plant wastewater treatment system.

Liner Protection: Liners will be protected during removal operations. In active operating cells, coal combustion materials will be removed to an elevation four feet above the surface of the landfill liner to serve as protection from potential frost damage. In landfills without liners, the coal combustion materials will be completely removed.

Geomembrane Covers: Landfills with geomembrane covers will be a low priority for recovery operations due to their excellent performance in reducing water infiltration. If coal combustion materials are recovered from a landfill with a geomembrane cover, the covering topsoil, clay and rooting zone materials will be removed by a bulldozer or scraper depending on the area involved and contractor equipment available. The soil cover materials will be neatly shaped and stockpiled on site for future use on the property. These stockpiles will be protected with erosion control measures (such as hay bales or silt fence) to prevent losses to surface water. The geomembrane will be removed in sections so that a new geomembrane could be attached if needed to re-establish the landfill cover.

Storage of Recovered Materials: Recovered coal combustion materials will be stored in the active removal area already equipped with leachate collection and perimeter berms. In cases where landfills are not equipped with a liner, a two foot thick clay storage pad will be constructed with a perimeter berm to contain the recovered materials and ash contact water. Storage of the coal combustion materials will be done in accordance with the requirements specified in section NR538.16 (1), Wis. Adm. Code and this generic plan modification.

Handling of Miscellaneous Foreign Materials: We expect to find small amounts of miscellaneous materials (e.g. soda pop cans, gloves, etc.) during the recovery of coal combustion materials. These foreign materials will be added to the appropriate power plant's waste stream in accordance with all solid waste regulations.

Temporary Capping and Closure: In the event that the need for recovered coal combustion materials decreases and recovery operations must be temporarily halted during the next construction season, the open area shall be temporarily covered with bottom ash from current plant production, soil, vegetation or other commercial covering techniques until recovery operations can resume. If recovery operations are to be

suspended for a full construction season or more, then a six inch compacted clay cover shall be installed over the open coal combustion products recovery area until a final cover is re-established or recovery operations can resume.

Transportation Equipment: Recovered coal combustion materials will be hauled in covered dump trucks to the point of utilization.

Quality Control: Coal combustion by-products removal shall be managed by a Landfill Manager (see s. NR524.03 (2), Wis. Adm. Code) certified in the State of Wisconsin to ensure removal, handling, storage, by-product categorization and operation are in compliance with regulations. The Company will audit the environmental management system of any business contracted to recover stored combustion waste materials from any landfill covered under this agreement prior to the commencement of recovery. The annual report will include a listing of contractor audits performed and a list of the sites where recovered ash materials (that were used for alternatives to natural sand, gravel and crushed stone) have been utilized.

Ash Sampling and Testing Procedures

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Pleasant Prairie Ash Landfill: In order to determine the chemical consistency of the coal combustion materials recovered from the landfill, the ash will be excavated, processed, and the stored in a designated area in the landfill in no larger than 50,000 cubic yard piles. A representative sample will be obtained per each 10,000 tons of reclaimed material for testing using guidelines presented in ASTM D2234. A minimum of five discrete samples of at least 25 pounds each will be collected from different locations on the storage pile. These discrete samples will be composited, mixed, and volume reduced by manual riffling to develop the analysis sample. Testing will be performed to measure category 2 parameters (described in ch. NR 538, Wis. Adm. Code), for use as sand/gravel/and crushed stone replacement materials. The samples will be subjected to the full category 1 "Other" including PCBs and asbestos if WE proposes to use the recovered material for categories 1, 2 and 3 uses as described in ch. NR 538, Wis. Adm. Code. Utilization of the recovered materials will comply with the NR 538 category met by the total and leachable testing parameter results.

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Other WE Licensed Landfills: Materials recovered from other licensed WE landfills for use as alternatives to natural sand, gravel, and crushed stone materials will be initially subjected to the full coal ash category 1 testing described in ch. NR 538, Wis. Adm. Code per each 5,000 tons of reclaimed material if the material is to be used in category 4 or 5 uses. The samples will subjected to the full category 1 "Other" testing including PCBs and asbestos if WE proposes to use the recovered material for categories 1, 2 and 3 uses as described in ch. NR538, Wis. Adm. Code. Utilization of the recovered materials will comply with the NR 538 category met by the total and leachable testing parameter results. The testing parameter list and frequency may also be changed on a site specific basis from experience obtained at the landfill site with WDNR concurrence.

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Unlicensed Landfills: Materials recovered from the other unlicensed landfills for use as fuel energy supplement will be initially subjected to the full category 1 "Other" testing described in ch. NR 538, Wis. Adm. Code, PCBs and asbestos, per each 5,000 tons of reclaimed material. The testing parameter list and frequency may also be changed on a site specific basis from experience obtained at the landfill site with WDNR concurrence.

Supplemental Fuel Materials Recovery: Monthly composite fuel sample testing will be performed to measure the following parameters for coal combustion materials recovered for use as a supplemental fuel:

Energy
Sulfur
Arsenic
Moisture Content.

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Implementation Plans:

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1. WE will notify the WDNR at least 45 days prior to beginning recovery of the stored coal combustion materials under the terms of this Agreement, for each landfill. In addition, within 45 days of notifying the WDNR of the intent to recover coal combustion materials from a WE landfill, a pre-recovery meeting will be conducted with the WDNR and the contractor to present and enhance site specific plans for coal combustion materials recovery. The notification and meeting are not necessary for any site where recovery of materials is already allowed under an active investigation or remedial action plan approved by WDNR. Otherwise, the 45 day notification to the WDNR will include an explanation of the planned work and describe any site specific deviations from the generic plan modification or concerns that may be present, including but not limited to the following:

a. the anticipated time frame for excavation and recovery of the coal combustion material;
b. any deviations from the generic plan modification regarding the proposed methods for removal, transportation, and storage of recovered materials
c. the anticipated timing for landfill closure;
d. the proposed or anticipated ultimate fate of each landfill and how this might affect the type closure necessary;
e. any proposed site specific modifications or changes to the sampling protocol of the recovered coal combustion materials;
f. any deviations or site specific special concerns that may be present regarding how the performance standards of s. NR538.04, Wis. Adm. Code are met while excavating, storing and handling the coal combustion. material (Some of the criteria to evaluate on a site specific basis include, but may not necessarily be limited to, location to flood plains, wetlands, streams, river, lakes, wells, parks, highways, critical habitat areas, etc.)

2. WE will continue to comply with all conditions of existing plan approvals, statutes and administrative codes that are not replaced by the generic plan modification or the cooperative agreement. This includes but is not limited to proper landfill closure under s. NR504.07, Wis. Adm. Code, environmental monitoring under ch. NR507 and NR508, Wis. Adm. Code, and annual reporting under NR 538 of the locations and uses for recovered material not used as a fuel supplement, unless changes to these requirements are requested and approved by the Department in writing on a site specific basis either as part of this cooperative agreement or as part of a separate plan modification.

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3. WE will also comply with all applicable fugitive dust and stormwater regulations when recovering, crushing/screening and storing materials as well as the requirements of this generic plan modification and the cooperative agreement.

4. For each landfill, WE will submit a formal ch. NR 500, Wis. Adm. Code plan modification within 180 days of completing materials recovery. The plan modification shall address closure, monitoring, and ultimate fate of the property.

5. WE will blend coal combustion materials recovered from Company landfills under the terms of this agreement with pulverized coal. The Company may burn the mixture as an alternate fuel in Boiler B20 or Boiler B21 at Pleasant Prairie Power Plant, without modifying this agreement or any existing permits, if no physical changes are made to the combustion units. All applicable emission limits and control requirements for those boilers are unchanged and shall continue to apply. The Company shall list all alternate fuels when applying for renewal of the operation permit for Pleasant Prairie Power Plant.

6. WE will continue to beneficially utilize fly ash and bottom ash created by combustion processes at Pleasant Prairie Power Plant, pursuant to the terms of the existing NR 538, Wis. Adm. Code.